

Update

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1. Collect data around nudge events

- Locate time window for nudge events
 - Shift takers rotate the radiator (and nudge it) before each run starts
 - Goniometer angles **pitch, yaw** change
 - From RCDB, get run start time T (@is_production and @status_approved)
 - In a 30-min interval [T-15mins, T+15mins]
 - Scan: pitch, yaw setpoint changes -> **Start time**
 - Reverse scan: pitch, yaw read back changes (finally become stable) -> **End time**

Date	HD:GONI:PITCH	HD:GONI:PITCH.RBV	HD:GONI:YAW	HD:GONI:YAW.RBV
2020-09-20 01:52:32	-0.73471	-0.73471	2.59061	2.59061
2020-09-20 01:52:33	-0.73471	-0.73471	2.59061	2.59061
2020-09-20 01:52:34	-0.73471	-0.73471	2.59061	2.59061
2020-09-20 01:52:35	-0.73471	-0.73471	2.59061	2.59061
2020-09-20 01:52:36	-0.73471	-0.73471	2.59061	2.59061
2020-09-20 01:52:37	-0.73471	-0.73471	2.59061	2.59061
2020-09-20 01:52:38	-0.73471	-0.73471	2.59061	2.59061
2020-09-20 01:52:39	-0.73471	-0.73471	2.59061	2.59061
2020-09-20 01:52:40	-0.73471	-0.73471	2.59061	2.59061
2020-09-20 01:52:41	0.39461	-0.72486	1.42629	2.58558
2020-09-20 01:52:42	0.39461	-0.67488	1.42629	2.53711
2020-09-20 01:52:43	0.39461	-0.6245	1.42629	2.4879
2020-09-20 01:52:44	0.39461	-0.57499	1.42629	2.43719
2020-09-20 01:52:45	0.39461	-0.52475	1.42629	2.38697
2020-09-20 01:52:46	0.39461	-0.4747	1.42629	2.33694
2020-09-20 01:52:47	0.39461	-0.42472	1.42629	2.28694
2020-09-20 01:52:48	0.39461	-0.37481	1.42629	2.23703
2020-09-20 01:52:49	0.39461	-0.32466	1.42629	2.18689
2020-09-20 01:52:50	0.39461	-0.27528	1.42629	2.13751
2020-09-20 01:52:51	0.39461	-0.22521	1.42629	2.08743
2020-09-20 01:52:52	0.39461	-0.17509	1.42629	2.03731
2020-09-20 01:52:53	0.39461	-0.12545	1.42629	1.98768
2020-09-20 01:52:54	0.39461	-0.07549	1.42629	1.93772
2020-09-20 01:52:55	0.39461	-0.02482	1.42629	1.88706
2020-09-20 01:52:56	0.39461	0.02546	1.42629	1.83791
2020-09-20 01:52:57	0.39461	0.07476	1.42629	1.78744
2020-09-20 01:52:58	0.39461	0.12496	1.42629	1.73726
2020-09-20 01:52:59	0.39461	0.1744	1.42629	1.68781
2020-09-20 01:53:00	0.39461	0.22505	1.42629	1.63717
2020-09-20 01:53:01	0.39461	0.27533	1.42629	1.5869
2020-09-20 01:53:02	0.39461	0.32538	1.42629	1.53686
2020-09-20 01:53:03	0.39461	0.37482	1.42629	1.48739
2020-09-20 01:53:04	0.39461	0.39461	1.42629	1.43701
2020-09-20 01:53:05	0.39461	0.39461	1.42629	1.42629

73225	2020-09-20 01:55:32	2:00:26	441169644	FCAL_BCAL_PS_m9	hd_all.tsg_DIRC_CC_HL	JD70-105, 0/90 PERP, 350 nA, product ion run
73224	2020-09-20 00:32:17	1:18:29	344270692	FCAL_BCAL_PS_m9	hd_all.tsg_DIRC_CC_HL	JD70-105 0/90 PARA , 350 nA, gluex production run

- Collect data in the time window for each second

- Variables
- Can add more variables if necessary

- Convert to CSV

```
Date,HD:GONI:PITCH,HD:GONI:PITCH.RBV,HD:GONI:YAW,HD:GONI:YAW.RBV,run,
2018-09-28 02:37:06,-3.59443,-3.5944300000000005,-1.59645,-1.59645,50699,-17.5,-
2018-09-28 02:37:07,-4.63445,-3.60172,-0.61443,-1.59332,50699,-17.5,-
2018-09-28 02:37:08,-4.63445,-3.6503400000000004,-0.61443,-1.54599,50699,-17.5,-
2018-09-28 02:37:09,-4.63445,-3.7010099999999997,-0.61443,-1.49644,50699,-17.5,-
2018-09-28 02:37:10,-4.63445,-3.75032,-0.61443,-1.44602,50699,-17.5,-
2018-09-28 02:37:11,-4.63445,-3.80076,-0.61443,-1.39558,50699,-17.5,-
2018-09-28 02:37:12,-4.63445,-3.8502,-0.61443,-1.34611,50699,-17.5,-
2018-09-28 02:37:13,-4.63445,-3.90098,-0.61443,-1.29646,50699,-17.5,-
2018-09-28 02:37:14,-4.63445,-3.9504,-0.61443,-1.24592,50699,-17.5,-
2018-09-28 02:37:15,-4.63445,-4.00025,-0.61443,-1.1961,50699,-17.5,-
2018-09-28 02:37:16,-4.63445,-4.04997,-0.61443,-1.14636,50699,-17.5,-
2018-09-28 02:37:17,-4.63445,-4.10065,-0.61443,-1.0957,50699,-17.5,-
2018-09-28 02:37:18,-4.63445,-4.15102,-0.61443,-1.04643,50699,-17.5,-
2018-09-28 02:37:19,-4.63445,-4.20038,-0.61443,-0.99596,50699,-17.5,-
2018-09-28 02:37:20,-4.63445,-4.25087,-0.61443,-0.94547,50699,-17.5,-
2018-09-28 02:37:21,-4.63445,-4.30071,-0.61443,-0.89562,50699,-17.5,-
2018-09-28 02:37:22,-4.63445,-4.3502,-0.61443,-0.84614,50699,-17.5,-
2018-09-28 02:37:23,-4.63445,-4.4008699999999999,-0.61443,-0.79547,50699,-17.5,-
2018-09-28 02:37:24,-4.63445,-4.45035,-0.61443,-0.74598,50699,-17.5,-
2018-09-28 02:37:25,-4.63445,-4.50001,-0.61443,-0.69633,50699,-17.5,-
2018-09-28 02:37:26,-4.63445,-4.55089,-0.61443,-0.64545,50699,-17.5,-
2018-09-28 02:37:27,-4.63445,-4.60026,-0.61443,-0.61443,50699,-17.5,-
2018-09-28 06:33:48,-4.63445,-4.63445,-0.61443,-0.61443,50701,-17.5,-
```

```
HD:GONI:PITCH
HD:GONI:PITCH.RBV
HD:GONI:YAW
HD:GONI:YAW.RBV
HD:GONI:ROLL
HD:GONI:ROLL.RBV
HD:GONI:RADIATOR_ID
HD:GONI:X
HD:GONI:X.RBV
HD:GONI:Y
HD:GONI:Y.RBV
MMSHLDE
HALLD:p
HD:CBREM:REQ_EDGE
HD:CBREM:EDGE
HD:CBREM:WIDTH
HD:CBREM:PLANE
IBCAD00CRCUR6
IPM5C11A.XPOS
IPM5C11A.YPOS
IPM5C11B.XPOS
IPM5C11B.YPOS
IPM5C11.XPOS
IPM5C11.YPOS
IPMAD00C.XPOS
IPMAD00C.YPOS
HD:GONI:RADIATOR_NAME
```

Goniometer

Electron beam energy

Coherent edge related

Beam current

Beam position

Radiator name

2. Collect integrated beam current for each run

- For each run
 - Run start & end time from RCDB (@status_approved)
 - Mean beam current from myStats
 - integrated beam current= mean beam current * time difference
- Convert to CSV with other variables
 - run number, goniometer position, radiator name, ...

	column 25	column 26	column 27	column 28	column 29	column 30
1	IPM5C11.YPOS	IPMAD00C.XPOS	IPMAD00C.YPOS	HD:GONI:RADIATOR_NAME	run_number	intCurrent_thisRun
2	0	0	0	4.5x10-4Al40um	50685	562531.4519999999
3	1.99306	1.32821	2.01999	JD70-10417um0/90deg	50697	3064741.356
4	0.174754	0.312103	2.15332	JD70-10417um0/90deg	50698	427580.768
5	0.617117	0.315449	1.71803	JD70-10417um0/90deg	50699	3384050.8479999998
6	-0.957906	0.729506	1.86285	4.5x10-4Al40um	50700	599900.495
7	0.278483	0.0662629	1.86354	JD70-10417um0/90deg	50701	1571249.835
8	4.22385	0.0606639	0.375497	JD70-10417um0/90deg	50702	1220132.868
9	2.60951	0.164318	2.18119	JD70-10417um45/135deg	50703	2083575.131
10	0	0	0	JD70-10417um45/135deg	50704	2192650.655
11	0.594875	0.187287	1.8706	JD70-10417um45/135deg	50705	2039083.2
12	-1.5398	0.280928	2.11651	JD70-10417um45/135deg	50706	2017640.7
13	1.1588	-0.292663	1.88471	JD70-10417um0/90deg	50707	195394.729
14	1.41852	0.101699	1.68581	4.5x10-4Al40um	50709	201451.70700000002
15	2.32508	0.0186296	2.08995	4.5x10-4Al40um	50710	443338.51399999997
16	0.176433	0.171545	2.12902	JD70-10417um0/90deg	50712	2535099.336

Summary

Finished run periods	run number range
Spring 2020	70000 - 79999
Fall 2018	50000 - 59999
Spring 2018	40000 - 49999

- Nudge event
 - /w/halld-scshelf2101/home/gjwei/AIOP/
 - spring2020/lite_mySampler_data_PV_list1.csv
 - Fall2018/lite_Fall2018_mySampler_data_PV_list1.csv
 - Spring2018/ lite_Spring2018_mySampler_data_PV_list1.csv
- Integrated beam current for each run
 - /w/halld-scshelf2101/home/gjwei/AIOP/intBeamCurrent_eachRun
 - Spring2020_intBeamCurrent_eachRun.csv
 - Fall2018_intBeamCurrent_eachRun.csv
 - Spring2018_intBeamCurrent_eachRun.csv